

REMARKS/ARGUMENTS

Claims 8-11, 14, 36, 44 and 45 have been canceled as directed to embodiments either already incorporated in the claims or directed to embodiments no longer being claimed.

Thus, the claims before the Examiner are Claims 1-7, 13, 15, 30, 32, 34, 37-40, 42, 43, 46, and 47.

The rejection of the claims under 35 U.S.C. §103 as unpatentable over newly cited Mitchell et al. '663 is respectfully traversed.

The Examiner describes in detail in the paragraph bridging pages 2 and 3 of the Office Action how in the Examiner's view the article shown in Mitchell et al. '663 is similar to that of the present invention. The Examiner acknowledges that the reference shows at column 13, lines 64-65 a thickness of 0.728 inches and states "However, there is no teaching or suggestion that the carbon composite article could not have possessed a thickness of from 0.05-1 mm."

It is asserted near the bottom of page 3 of the Office Action that the bending resistance, in-plane volume resistivity, gas permeability, and degree of fluffing "would be inherently present as like material has like properties." Applicants respectfully point out that the nature of the materials and the different stated uses for the Mitchell et al. '663 articles and the conductive carbonaceous-fiber fabric, as explained in detail below, do not permit such a conclusion to be drawn.

Applicants respectfully submit that the article described in Mitchell et al. '663 is sufficiently different from the instantly claimed subject matter that the latter patentably defines over the former.

The present invention is directed to a very thin conductive carbonaceous-fiber fabric stated to have a thickness of from 0.05-1 mm. The very thin arrangement is to achieve gas permeability and to be able to use the conductive fabric in contemplated environments. Due

to its construction, the carbonaceous-fiber fabric has excellent electrical conductivity and gas permeability with moderate stiffness useful as a gas diffusion layer in solid polymer electrolyte fuel cells and in power sources for motor vehicles and power sources for cogeneration power systems; see the FIELD OF THE INVENTION on page 1 of the specification. Table 1 at page 45 shows that operating within the limits of the present claims one is able to form a conductive carbonaceous-fiber fabric with a combination of excellent volume resistivity, bending resistance, and gas permeability. Mitchell et al. '663 on the other hand is directed to a carbon composite article that is intended to be used in the "large scale production of such [carbon composites] for use in nuclear, aerospace, aircraft and industrial fields": see column 1, lines 26-29. The product in Mitchell et al. '663 is in turn stacked in a variety of laminates to build up and strengthen the product and it is in such a construction that the panel having a thickness of 0.728 inches mentioned by the Examiner in the Office Action was prepared. A comparison of the maximum thickness for the conductive carbonaceous fiber fabric of the present invention with the thickness indicated in Mitchell et al. '663 shows that the former is 18.49 times thinner than the latter. It is respectfully submitted that these thickness differences are significant and show and establish the patentable difference between the subject matter claimed and what is taught in the reference. The paragraph bridging pages 7 and 8 of the specification informs a reader that the fabric has a minimum thickness of 0.05 mm because a thinner sheet has too low a tensile strength and it is difficult to achieve a bending resistance of at least 6 cm as determined by the 45° Cantilever method. A fabric having a thickness exceeding 1 mm has reduced gas-diffusing properties. The difference in thicknesses is not surprising because the contemplated uses of the products are so different. There are significant differences in properties. In Mitchell et al. '663, moreover, the substrate, after being shaped in a desired configuration "is then partially or fully densified in a freestanding configuration by chemical vapor deposition of

pyrolytic materials interstitially of the substrate”; see the last four lines of the Abstract. The technique is also discussed in the reference at column 7, lines 32-37 and Examples 3 and 4. The rejection should be withdrawn.

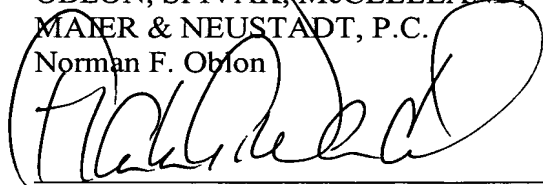
The paragraph bridging pages 3 and 4 of the Office Action refers to “the carbon composite article of Mitchell as modified by Winckler” but there is no indication prior to that paragraph that the rejection is based upon a combination of references. The rejection is considered to be based upon Mitchell et al. ‘663 alone. Compare this rejection with the rejection of Claims 6 and 40 discussed below.

The rejection of Claims 6 and 40 under 35 U.S.C. §103 as unpatentable over Mitchell et al. ‘663 in view of Winckler ‘993 is also respectfully traversed. The secondary reference is said to show a fiber with an average fiber size of 6-12 microns. The reference however does not overcome that which is lacking in Mitchell et al. ‘663 and the rejection should be withdrawn as well.

The Examiner is requested to telephone the undersigned if additional changes are required in the case prior to allowance.

Respectfully submitted,

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